

# TA-F319R

## SERVICE MANUAL

AEP Model  
UK Model  
E Model



### SPECIFICATIONS

#### Amplifier

Continuous RMS power output (both channels driven simultaneously)

#### Model for Germany

DIN, 1 kHz	4 ohms	50 W + 50 W
	8 ohms	40 W + 40 W
20 Hz - 20 kHz	4 ohms	—
	8 ohms	30 W + 30 W

#### Model for Scandinavian countries, Switzerland, Spain and Portugal

DIN, 1 kHz	6 ohms	—
	8 ohms	50 W + 50 W
20 Hz - 20 kHz	6 ohms	—
	8 ohms	40 W + 40 W

#### Model for other countries

DIN, 1 kHz	4 ohms	—
	8 ohms	50 W + 50 W
20 Hz - 20 kHz	4 ohms	—
	8 ohms	40 W + 40 W

#### Input

Input jack	Jack type	Sensitivity	Impedance
PHONO	Phono	2.0 mV	50 kilohms
TUNER, CD, AUX, DAT/TAPE 1 TAPE 2	Phono	150 mV	50 kilohms

#### S/N

PHONO (MM)	—
TUNER, CD, AUX, DAT/TAPE 1 TAPE 2	100 dB

#### Output

Output jack	Jack type	Voltage/impedance
REC OUT	Phono jack	Voltage 150 mV Impedance 1 kohm
HEADPHONES	Stereo phono jack	Accepts low and high impedance headphones

#### Tone controls

	Response	Turnover frequency
BASS	±7 dB (100 Hz)	300 Hz
TREBLE	±6 dB (10 kHz)	5 kHz

INTEGRATED STEREO AMPLIFIER  
**SONY**<sup>®</sup>



MICROFILM

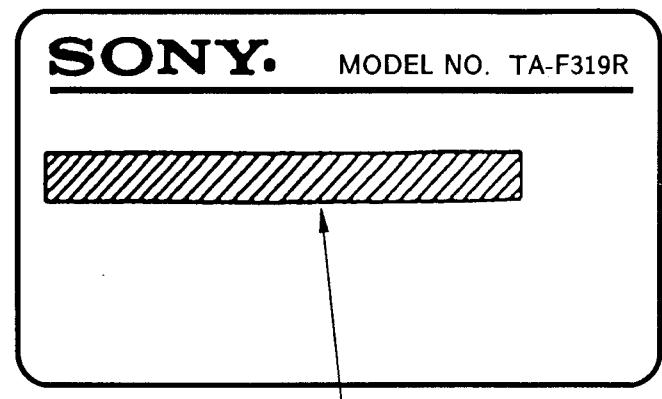
Harmonic distortion	Less than 0.03% at 10 W output
Intermodulation (IM) distortion (60 Hz : 7 kHz = 4:1)	Less than 0.03% at 10 W output
Frequency response	PHONO: RIAA equalization curve ±0.5 dB TUNER, CD, AUX, DAT/TAPE 1, TAPE 2: 7 Hz – 100 kHz +0 dB Less than 170 µV (network A) 50 (8 ohms, 1 kHz)
Residual noise	
Damping factor	
<b>General</b>	
System	Preamplifier: Low-noise, equalizer amplifier Power amplifier: Pure-complementary SEPP OCL power amplifier with all stages directly coupled
Power requirements	UK model : 240 V AC, 50/60 Hz AEP, Germany model : 220 V – 230 V AC, 50/60 Hz E model : 120 V, 220 V or 240 V AC adjustable, 50/60 Hz
Power consumption	130 W
Dimensions	Approx. 430 x 135 x 315 mm (w/h/d) (17 x 5 3/8 x 12 1/2 inches)
Weight	Approx. 6.3 kg (13 lb 14 oz)
Supplied accessories	Remote commander RM-S311 (1) Sony SUM-3 (NS) batteries (2)
The above values are measured at 230 V AC. (Models for European countries)	
Design and specifications are subject to change without notice.	
<b>Note</b>	
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.	

## TABLE OF CONTENTS

Section	Title	Page
Specifications	1	
Model Identification	2	
<b>1. GENERAL</b>	3	
<b>2. ELECTRICAL ADJUSTMENTS</b>	4	
<b>3. DIAGRAMS</b>		
3-1. Block Diagram	5	
3-2. Circuit Boards Location	7	
3-3. Printed Wiring Boards	10	
3-4. Schematic Diagram	15	
3-5. IC Block Diagram	19	
<b>4. EXPLODED VIEWS</b>		
4-1. Front Panel Section	20	
4-2. Chassis Section	21	
<b>5. ELECTRICAL PARTS LIST</b>	22	

## MODEL IDENTIFICATION

- *Specification Label Printed on Back Panel* -



**AEP, Germany Model** : AC : 220 – 230V ~ 50/60Hz

**UK Model** : AC : 240V ~ 50/60Hz

**E Model** : AC : 120/220/240V ~ 50/60Hz

### Note :

There are two type of AEP models which are depend on countries.

**AEP2 model** : Model for Scandinavian countries,  
Switzerland, Spain and Portugal

**AEP1 model** : Model for other European countries

## SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\Delta$  OR DOTTED LINE WITH MARK  $\Delta$  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

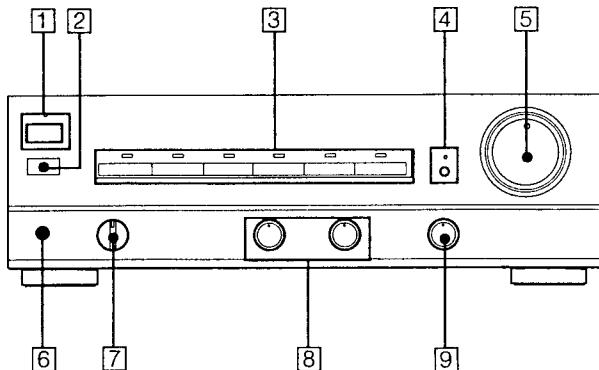
## SECTION 1

### GENERAL

This section is extracted from instruction manual.

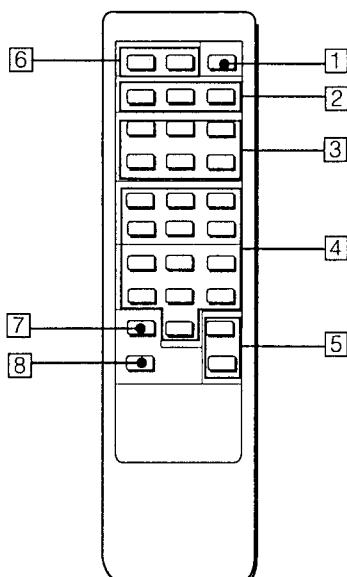
## Identifying the Parts and Controls

This section describes about each name of this amplifier and remote commander.



### Front Panel

- ① POWER switch and STANDBY indicator
- ② Remote control sensor
- ③ Function selectors and indicators (MONITOR indicator: Only for TA-F319R)
- ④ SOURCE DIRECT button and indicator
- ⑤ VOLUME control and indicator  
Adjusts the sound level.  
Immediately after turning on the POWER switch, the VOLUME indicator blinks when the built-in muting circuit activates and the unit detects shorting of circuit of the speaker outputs or in case of short-circuit of the inputs of DC components. In such case, turn off the unit and check the connected components and speaker system. (For TA-F319R, the VOLUME indicator does not blink.)
- ⑥ HEADPHONES jack
- ⑦ SPEAKERS selector
- ⑧ TONE (BASS/TREBLE) controls
- ⑨ BALANCE control



RM-S311

### Remote Commander

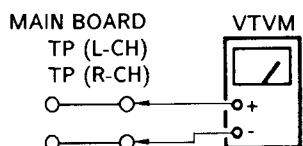
- ① POWER switch
- ② TUNER operation buttons  
TUNER: Select the TUNER mode.  
PRESET +/- buttons: Select the preset station.
- ③ CD operation buttons  
◀◀/▶▶: Automatic music sensor.  
D. (Disc) SKIP: Disc skip (for CD player equipped with a multi-disc changer)  
▶: The amplifier enters the CD mode and the CD player starts playback automatically.  
■: Stop.  
■: Pause.
- ④ TAPE 2 DECK A/DECK B operation buttons  
◀◀/▶▶: Fast winding.  
■: Stop.  
◀: The amplifier enters the TAPE 2 mode and the tape deck starts reverse playback automatically.  
▶: The amplifier enters the TAPE 2 mode and the tape deck starts forward playback automatically.  
●: Recording.  
■: Pause. (Only for DECK B)
- ⑤ VOL (Volume) +/- buttons
- ⑥ PHONO operation buttons  
START: Pressing START automatically selects the PHONO mode on the amplifier and starts playback of the turntable system.  
STOP: Stops playback of the turntable system.
- ⑦ DAT/TAPE 1 button  
Selects the DAT or TAPE 1 mode.
- ⑧ AUX button  
Selects the AUX mode.

## SECTION 2

### ELECTRICAL ADJUSTMENTS

**Note :**

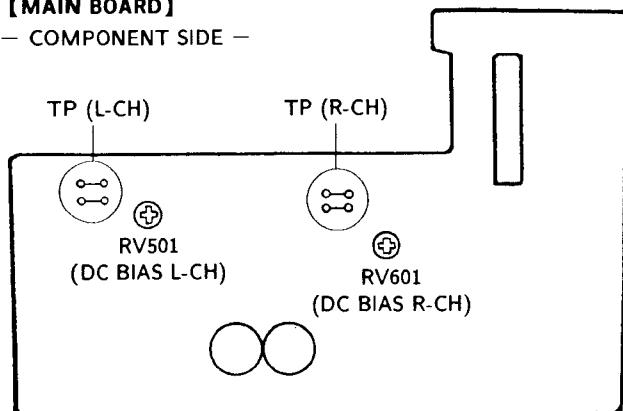
1. DC BIAS adjustments should be made within 2 to 3 minutes after the POWER switch is turned on (POWER ON).
2. After replacing the power transistors, DC BIAS adjustments should be made.

**DC Bias Adjustment (with no signal input)****Procedure :**

	Adjustment part	Reading on VTVM
L-CH	RV501	6.5mV
R-CH	RV601	6.5mV

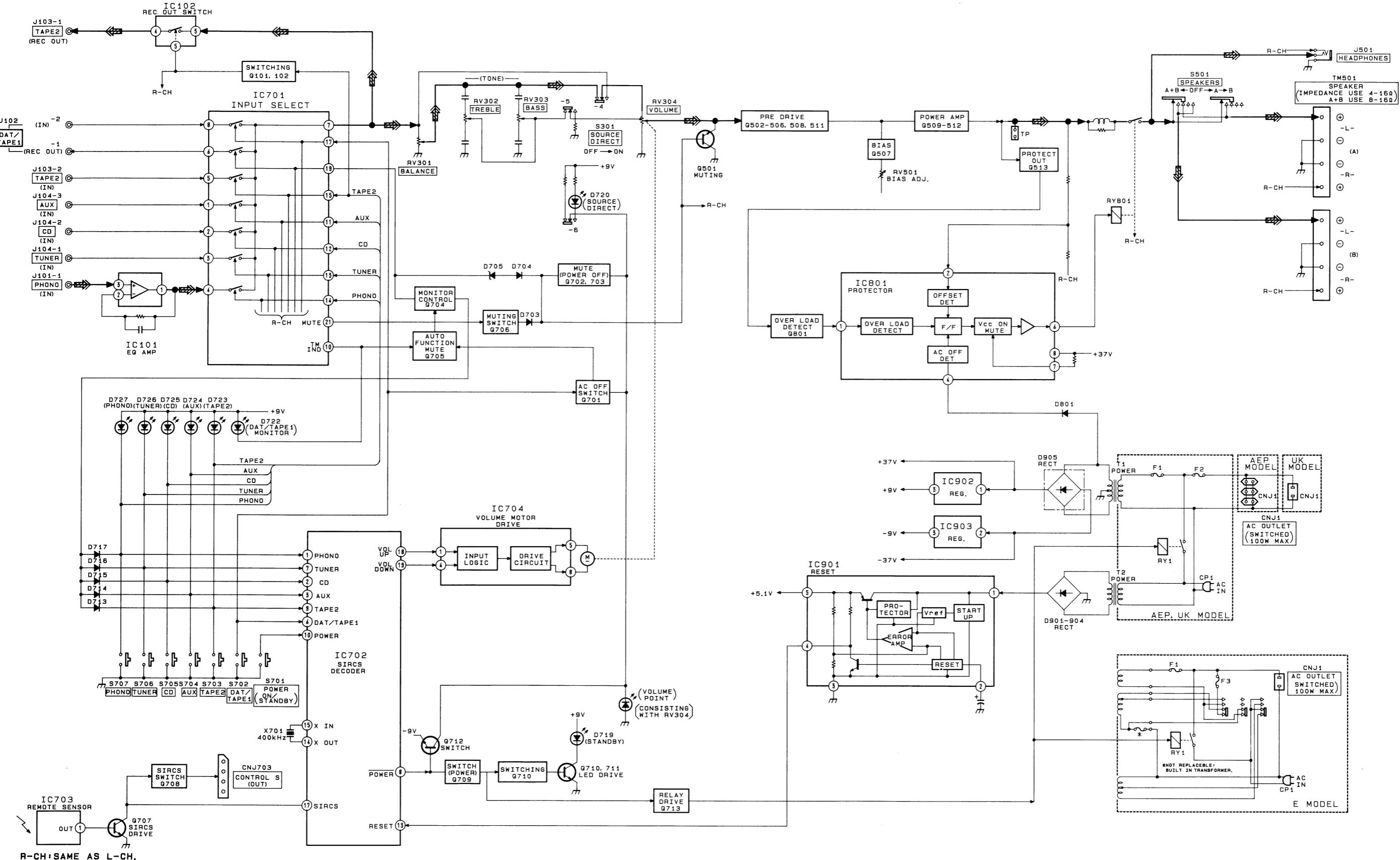
**【MAIN BOARD】**

— COMPONENT SIDE —



### SECTION 3 DIAGRAMS

#### 3-1. BLOCK DIAGRAM



#### 3-2. CIRCUIT

TRANS

FU

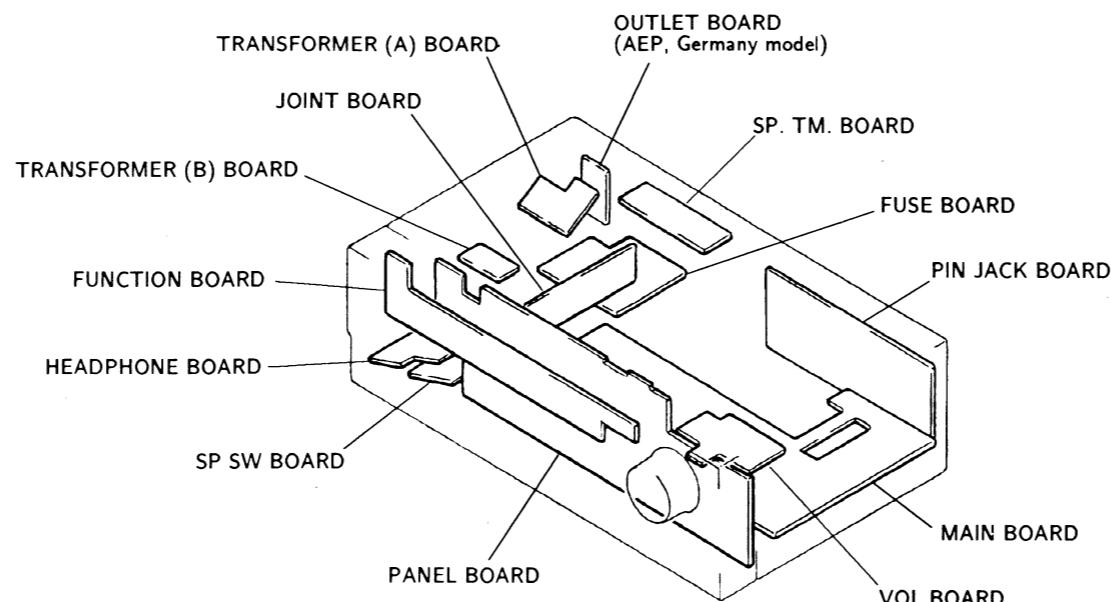
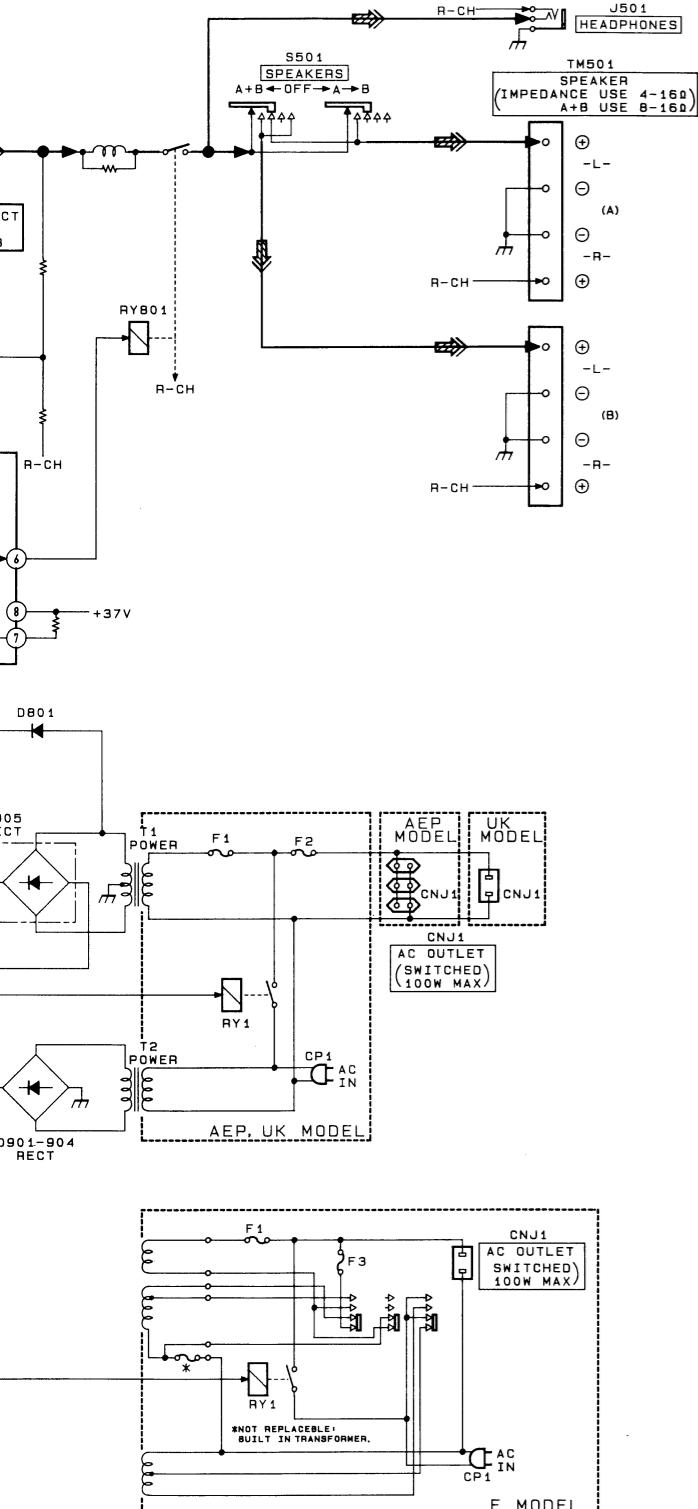
HEA

#### ● IC702 Func

Micro Processor  
code signal input

Pin No.	Pin No.
1	PH
2	CD
3	AU
4	CN
5	VS
6	TA
7	TU
8	PO
9	TA
10	PO
11	MO
12	NO
13	RE
14	X
15	X
16	NO
17	SIR
18	VO
19	VO
20	VD

### 3-2. CIRCUIT BOARDS LOCATION

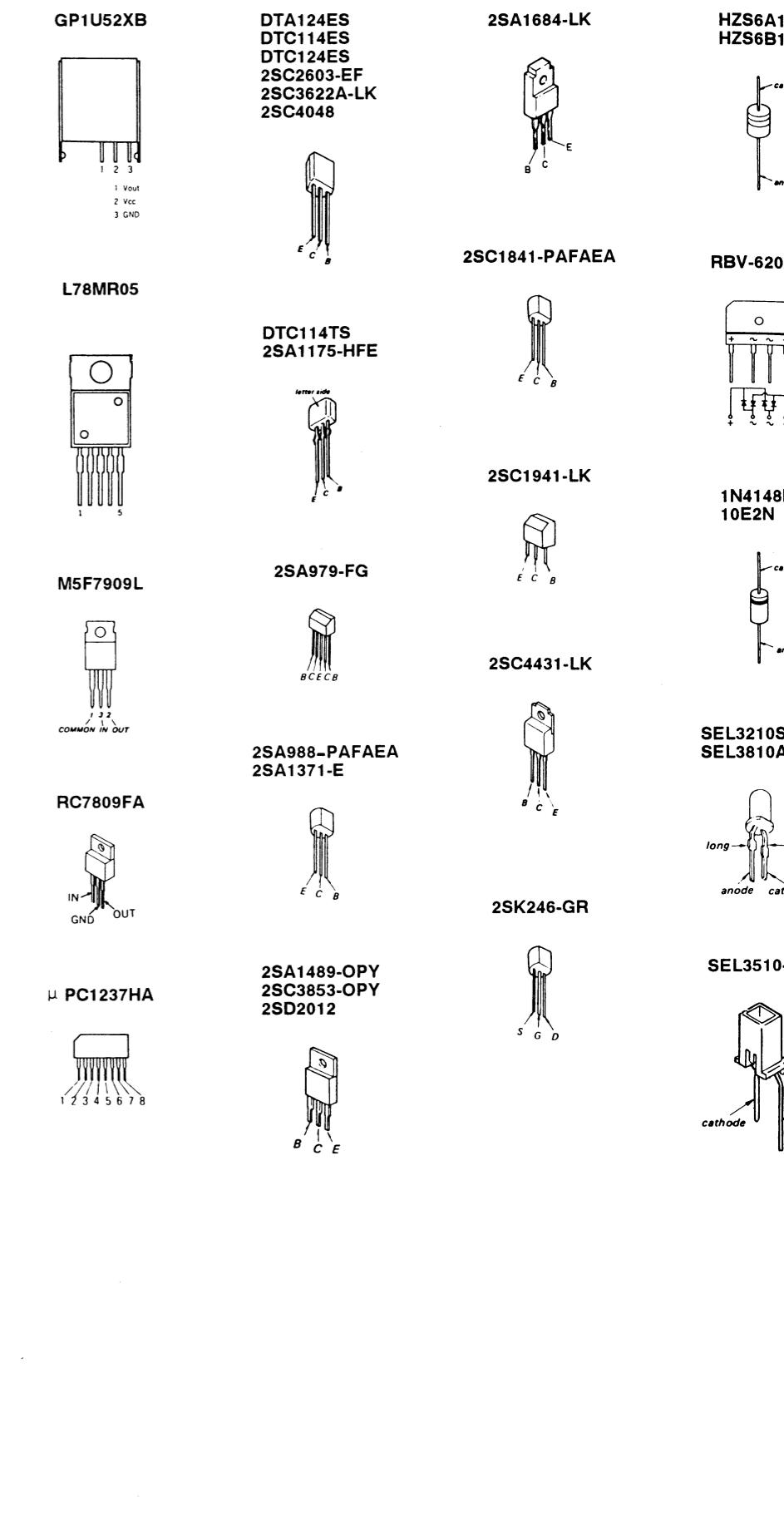


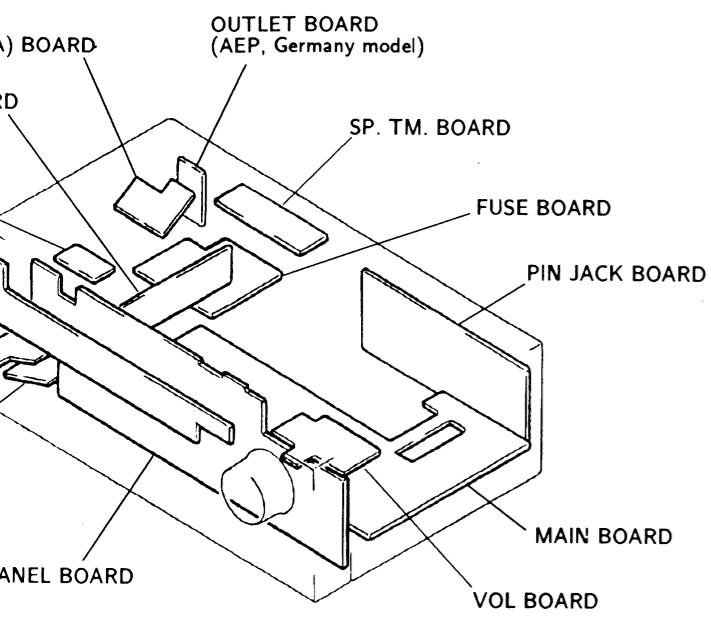
#### ● IC702 Function Controller (M50761-291P)

Micro Processor M50761-291P is used for control the volume up/down, function select and power on/standby by SIRCS code signal input and power on/standby key code signal input.

Pin No.	Pin Name	I/O	Description						
1	PHONO	O	Function select output. (one-shot output) (L : PHONO)						
2	CD	O	Function select output. (one-shot output) (L : CD)						
3	AUX	O	Function select output. (one-shot output) (L : AUX)						
4	CN VSS	—	Ground						
5	VSS	—	Ground						
6	TAPE1	O	Function select output. (one-shot output) (L : TAPE1)						
7	TUNER	O	Function select output. (one-shot output) (L : TUNER)						
8	POWER	O	Power supply ON/OFF relay (RY1) control output. (L : POWER ON, H : POWER OFF)						
9	TAPE2	O	Function select output. (one-shot output) (L : TAPE2)						
10	POWER IN	I	POWER ON/STANDBY key switch input.						
11	MODE	I	Mode select input. This model is used "H" level only.						
			<table border="1"> <tr> <td></td><td>POWER ON/OFF mode</td></tr> <tr> <td>H</td><td>USED</td></tr> <tr> <td>L</td><td>NOT USED</td></tr> </table>		POWER ON/OFF mode	H	USED	L	NOT USED
	POWER ON/OFF mode								
H	USED								
L	NOT USED								
12	NC	—	Ground						
13	RESET	I	Reset signal input.						
14	X OUT	O	Ceramic vibrator connection terminal. (400Hz)						
15	X IN	O	Ceramic vibrator connection terminal. (400Hz)						
16	NC	—	Ground						
17	SIRCS	I	SIRCS code signal input. (serial input)						
18	VOL UP	O	Volume motor up control output. (continuous output)						
19	VOL DOWN	O	Volume motor down control output. (continuous output)						
20	VDD	—	+5V power supply.						

### • SEMICONDUCTOR LEAD LAYOUTS



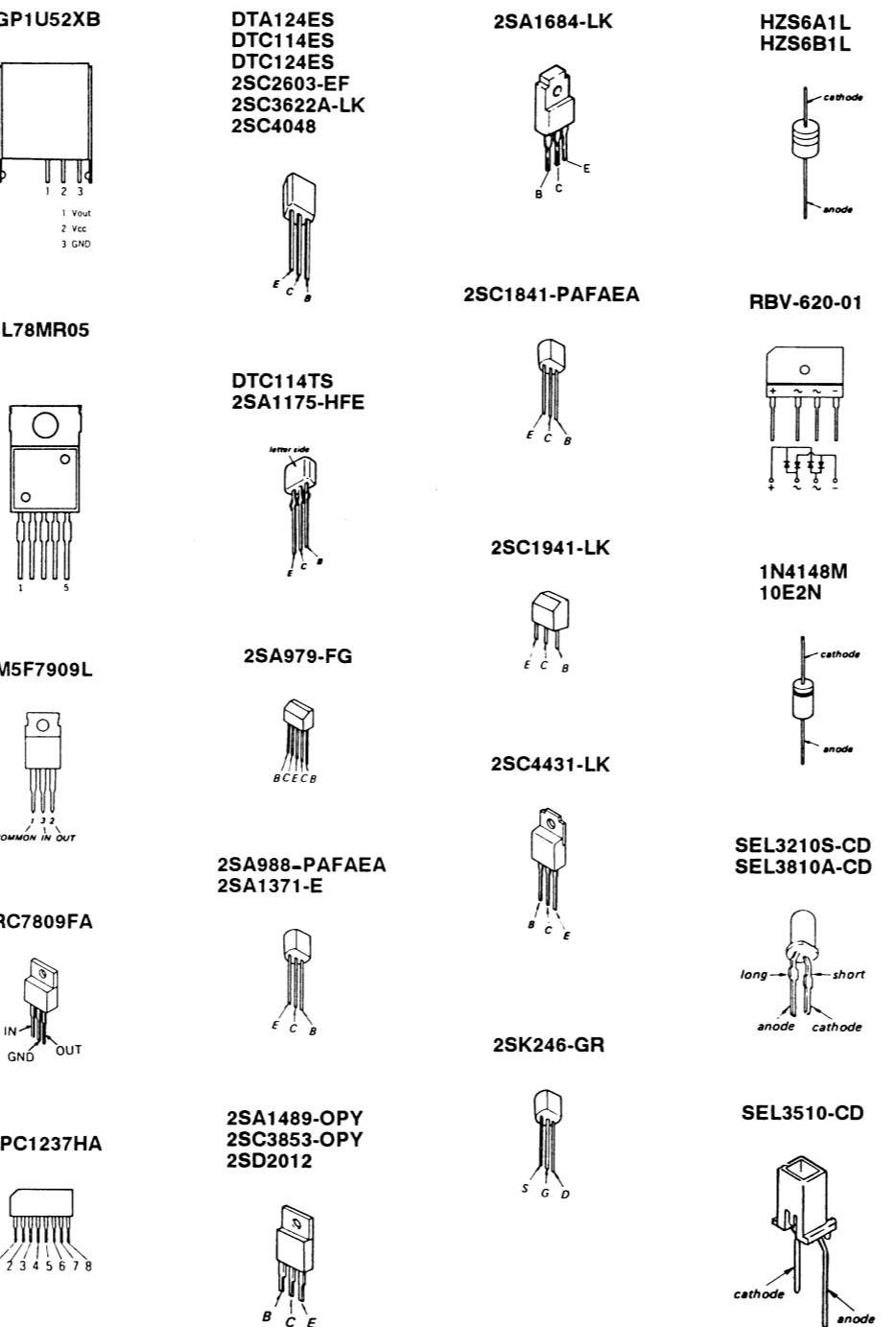


1P)

control the volume up/down, function select and power on/standby by SIRCS  
code signal input.

Description	
select output. (one-shot output) (L : PHONO)	
select output. (one-shot output) (L : CD)	
select output. (one-shot output) (L : AUX)	
select output. (one-shot output) (L : TAPE1)	
select output. (one-shot output) (L : TUNER)	
apply ON/OFF relay (RY1) control output. (L : POWER ON, H : POWER OFF)	
select output. (one-shot output) (L : TAPE2)	
ON/STANDBY key switch input.	
control input. This model is used "H" level only.	
POWER ON/OFF mode	
USED	
NOT USED	
al input.	
iblitor connection terminal. (400Hz)	
iblitor connection terminal. (400Hz)	
de signal input. (serial input)	
otor up control output. (contineous output)	
otor down control output. (contineous output)	
r supply.	

#### • SEMICONDUCTOR LEAD LAYOUTS



### 3-3. PRINTED WIRING BOARD

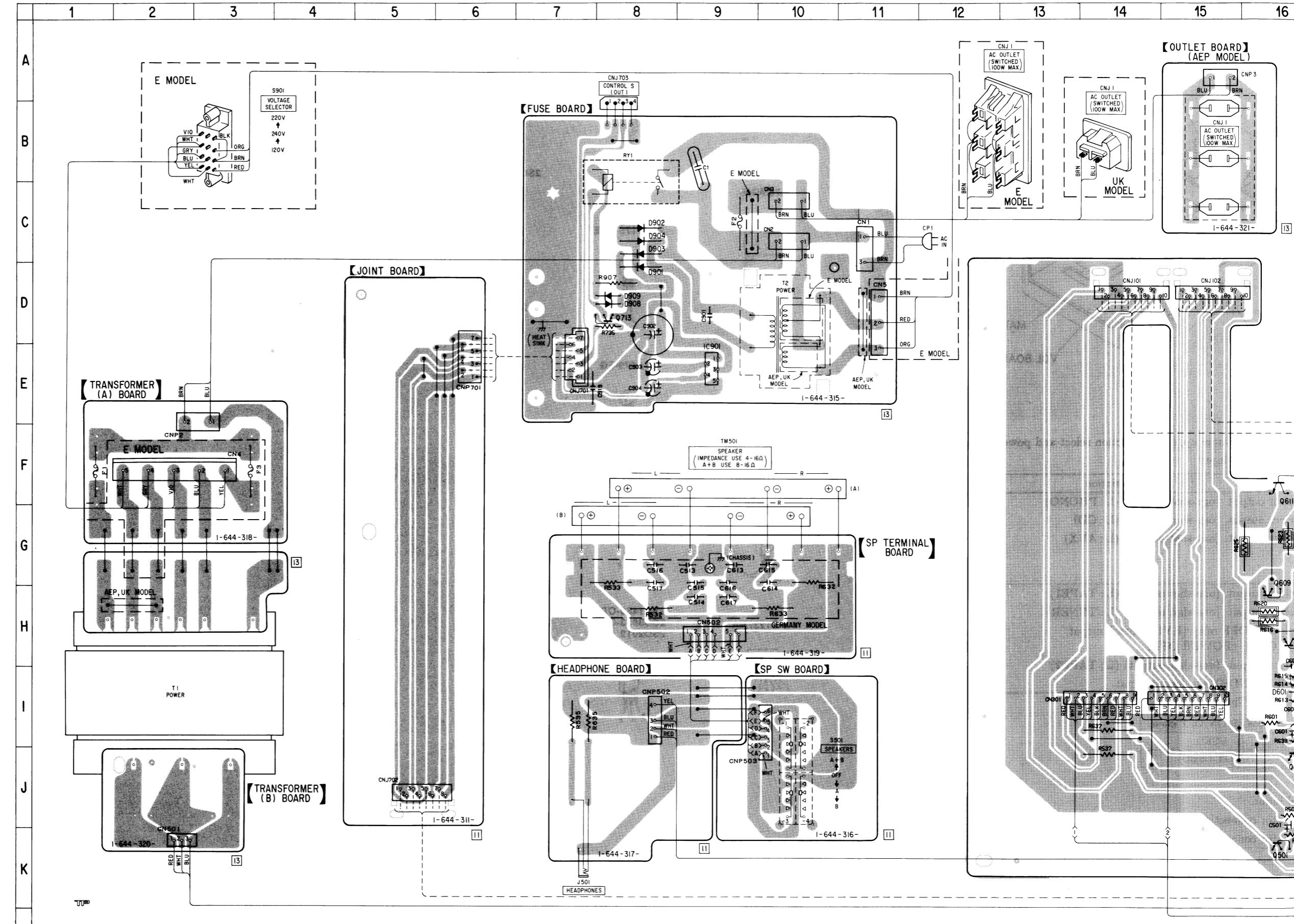
- Refer to Page 8 for Semiconductor Lead Layout

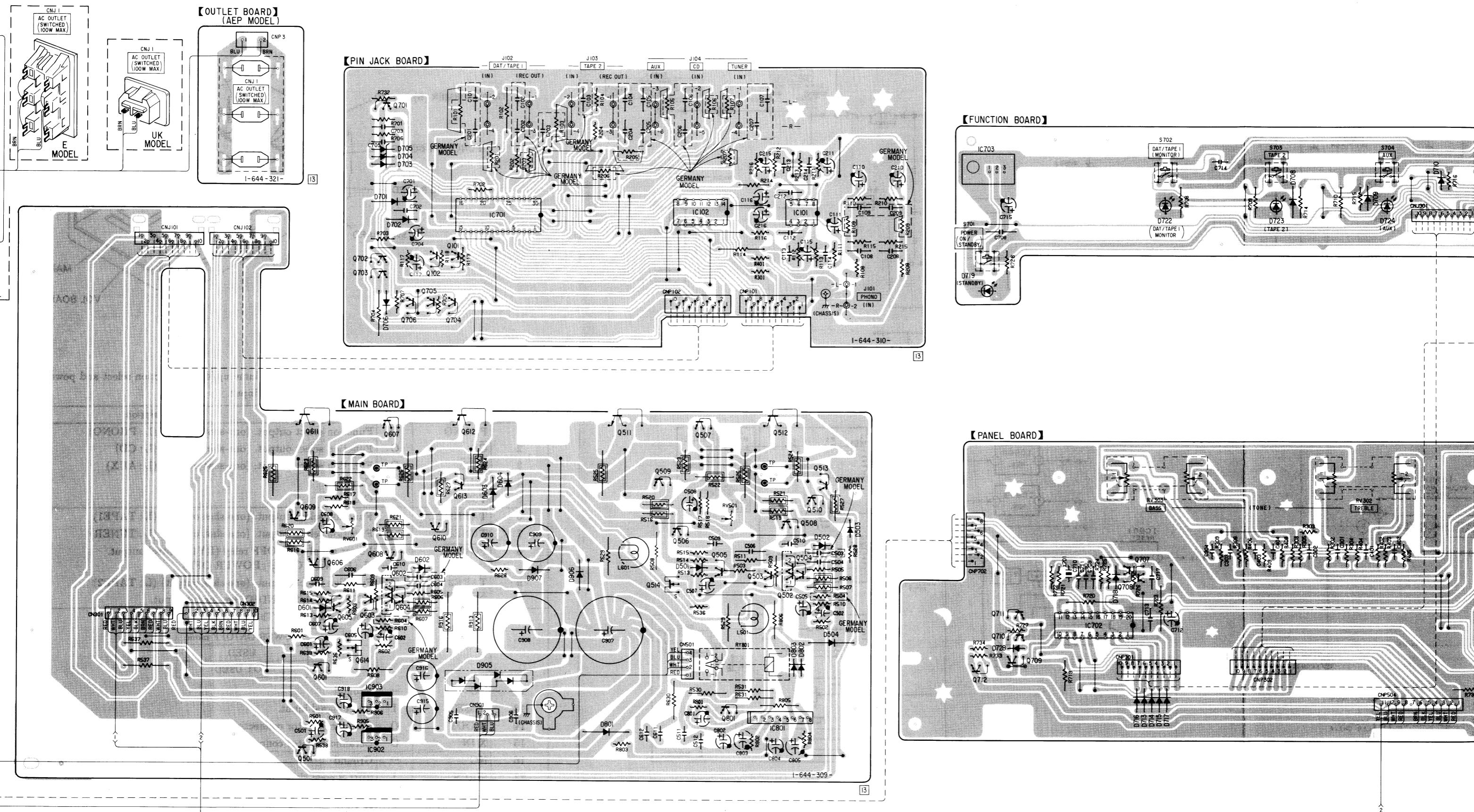
- SEMICONDUCTOR LOCATION

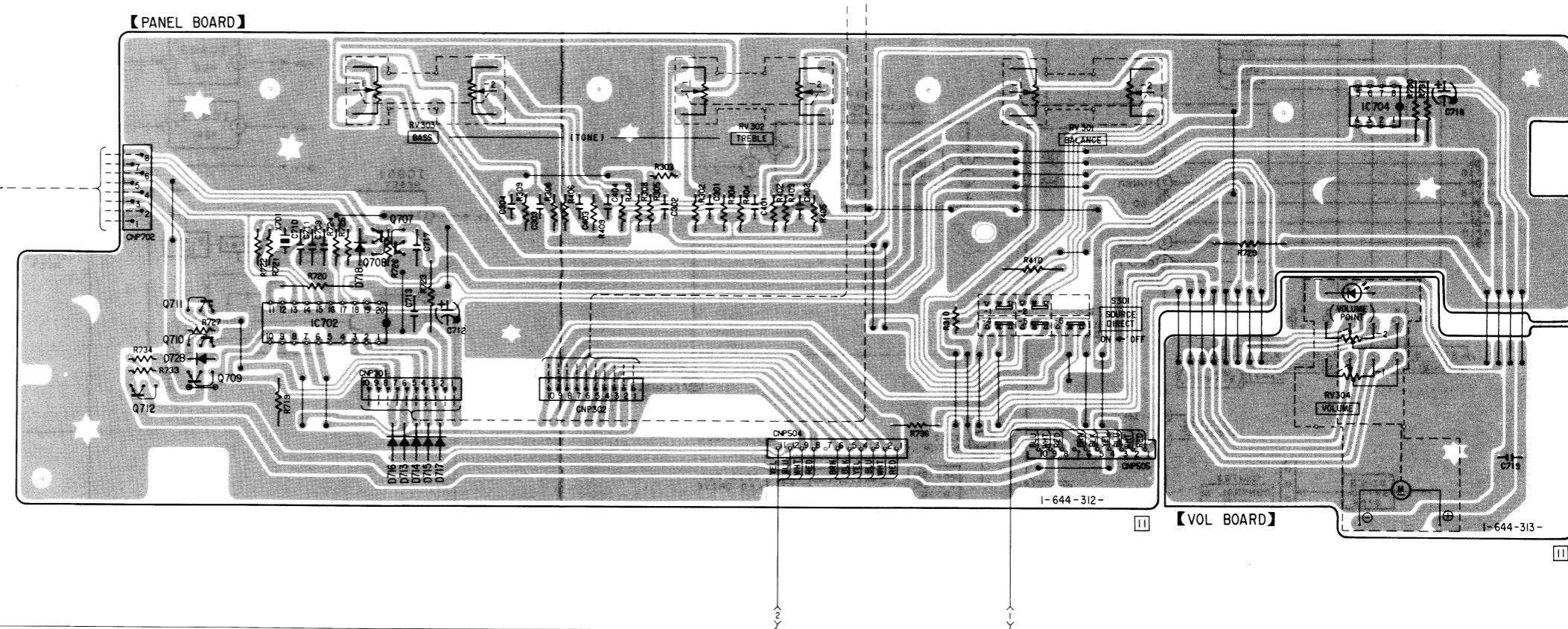
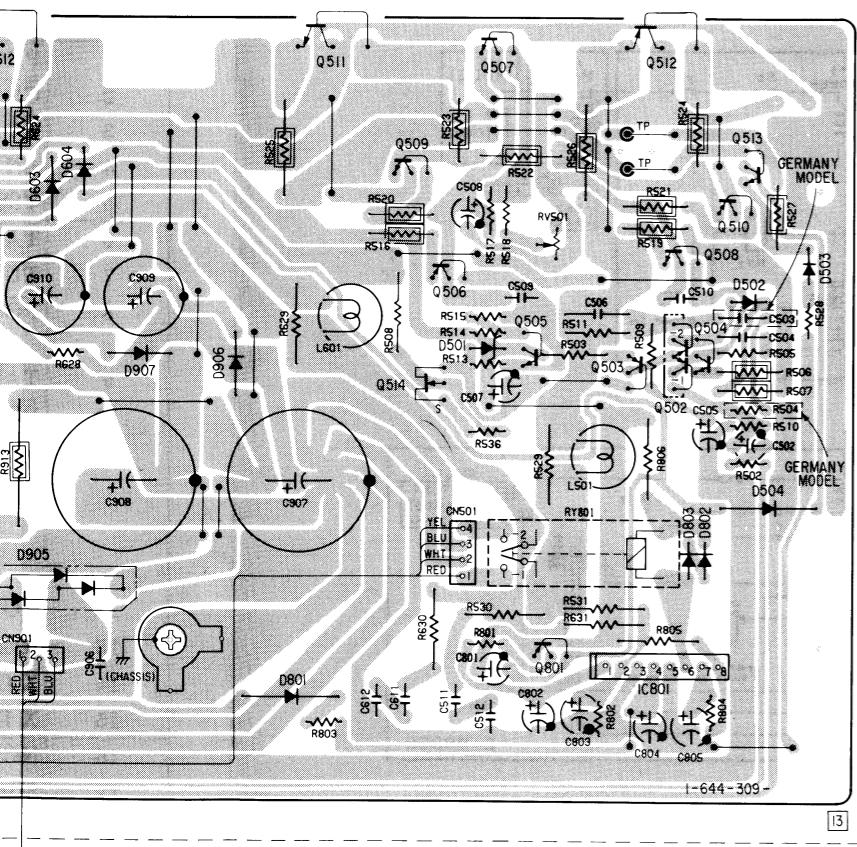
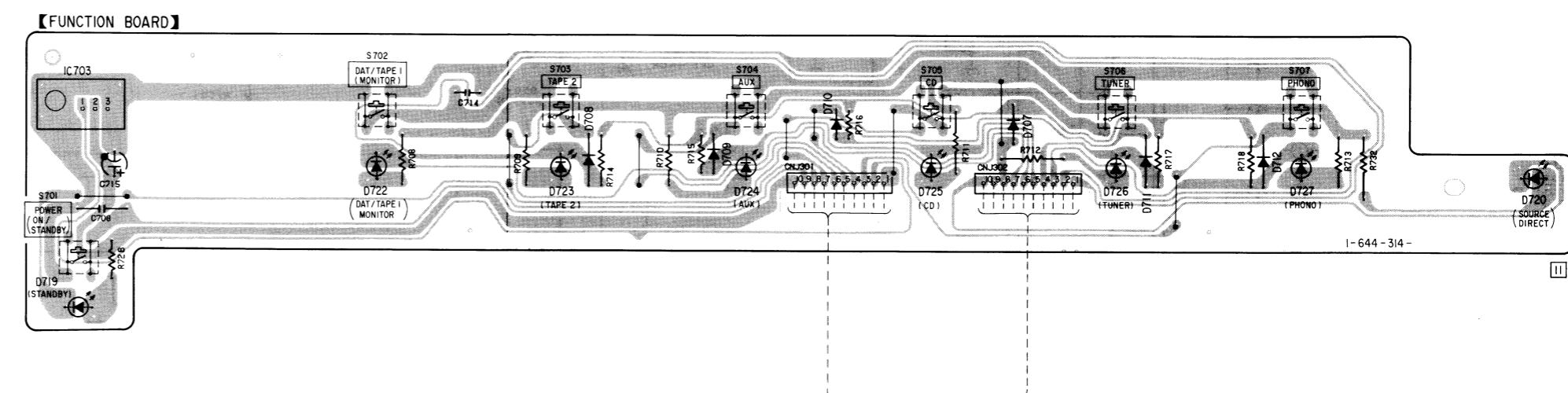
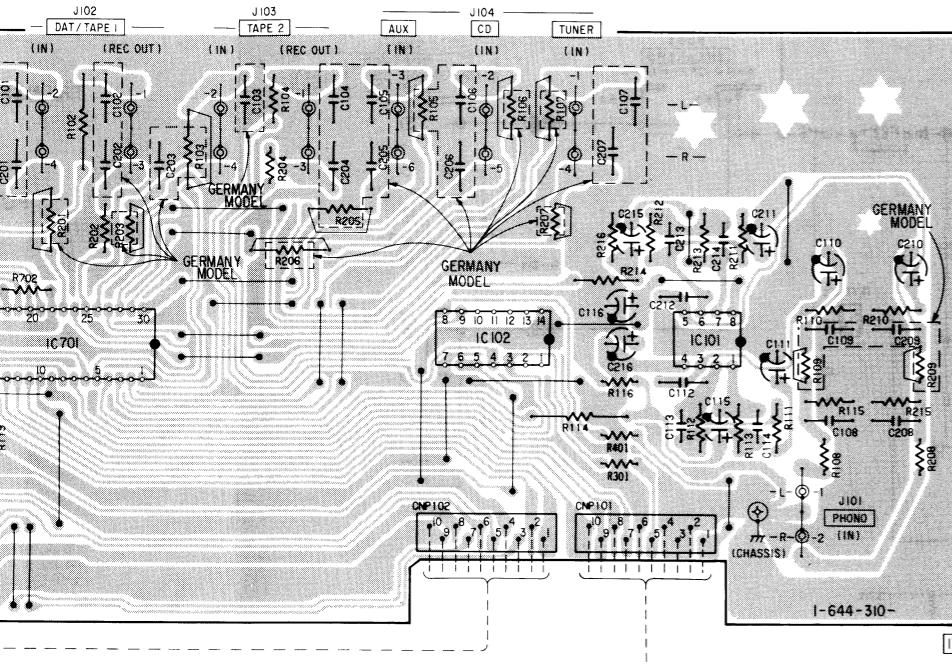
Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D501	H - 21	D903	C - 8	Q605	I - 16
D502	H - 23	D904	C - 8	Q606	H - 16
D503	H - 23	D905	J - 18	Q607	F - 17
D504	I - 23	D906	H - 20	Q608	H - 17
D601	I - 16	D907	H - 19	Q609	H - 16
D602	H - 18	D908	D - 8	Q610	H - 18
D603	G - 18	D909	D - 8	Q611	F - 16
D604	G - 19			Q612	F - 18
D701	C - 17			Q613	G - 18
D702	D - 17	IC101	D - 23	Q614	I - 17
		IC102	D - 21		
D703	C - 17	IC701	D - 19	Q701	B - 17
D704	C - 17	IC702	I - 27	Q702	D - 17
D705	C - 17	IC703	C - 25	Q703	D - 17
D706	E - 17			Q704	E - 18
D707	C - 33	IC704	G - 35	Q705	E - 18
		IC801	J - 22		
D708	C - 29	IC901	E - 9	Q706	E - 17
D709	C - 30	IC902	K - 17	Q707	H - 27
D710	C - 31	IC903	J - 17	Q708	H - 27
D711	C - 34			Q709	I - 25
D712	C - 35			Q710	I - 25
		Q101	D - 18		
D713	J - 27	Q102	D - 18	Q711	I - 25
D714	J - 27	Q501	K - 16	Q712	J - 25
D715	J - 27	Q502	H - 22	Q713	D - 8
D716	J - 27	Q503	H - 22	Q801	J - 22
D717	J - 27				
		Q504	H - 23		
D718	H - 27	Q505	H - 21		
D719	D - 25	Q506	H - 21		
D720	C - 37	Q507	F - 21		
D722	C - 27	Q508	H - 22		
D723	C - 29				
		Q509	G - 21		
D724	C - 30	Q510	G - 23		
D725	C - 32	Q511	F - 20		
D726	C - 33	Q512	F - 22		
D727	C - 35	Q513	G - 23		
D728	I - 25				
		Q514	I - 21		
D801	J - 20	Q601	J - 16		
D802	J - 23	Q602	I - 17		
D803	J - 23	Q603	I - 17		
D901	D - 8	Q604	I - 17		
D902	C - 8				

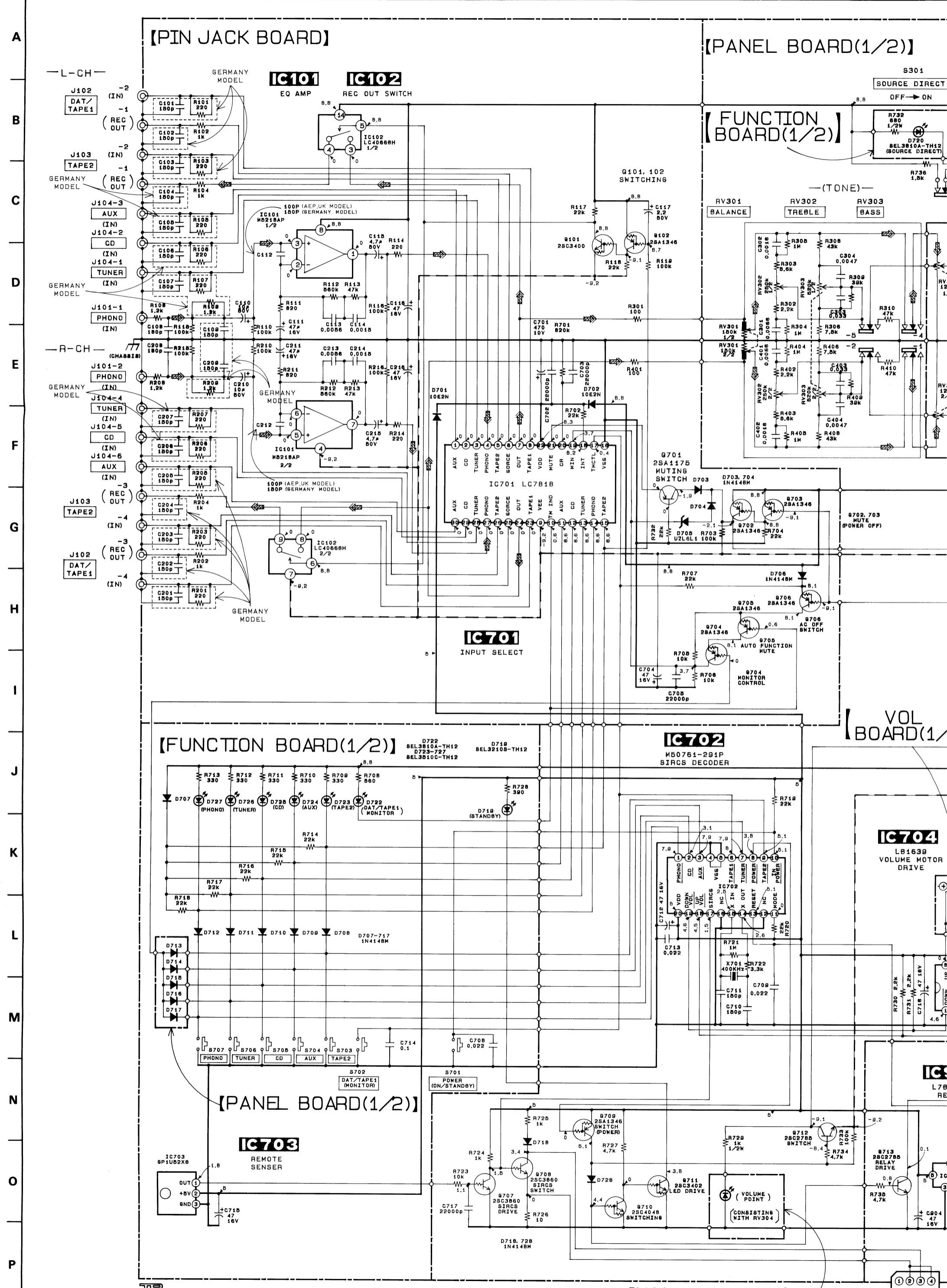
### Note

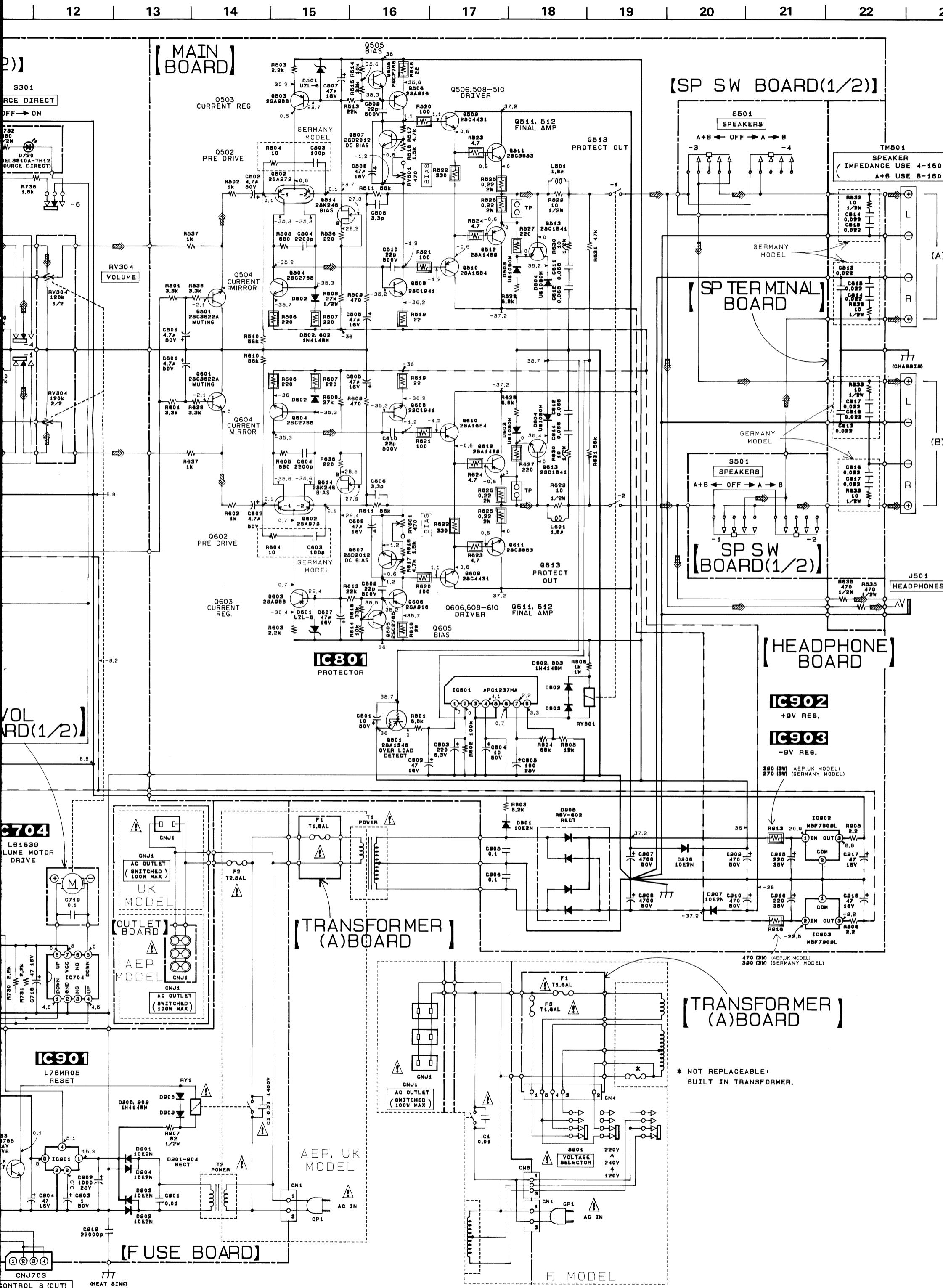
- : parts extracted from the component side
- ..... : Pattern on the side which is seen.

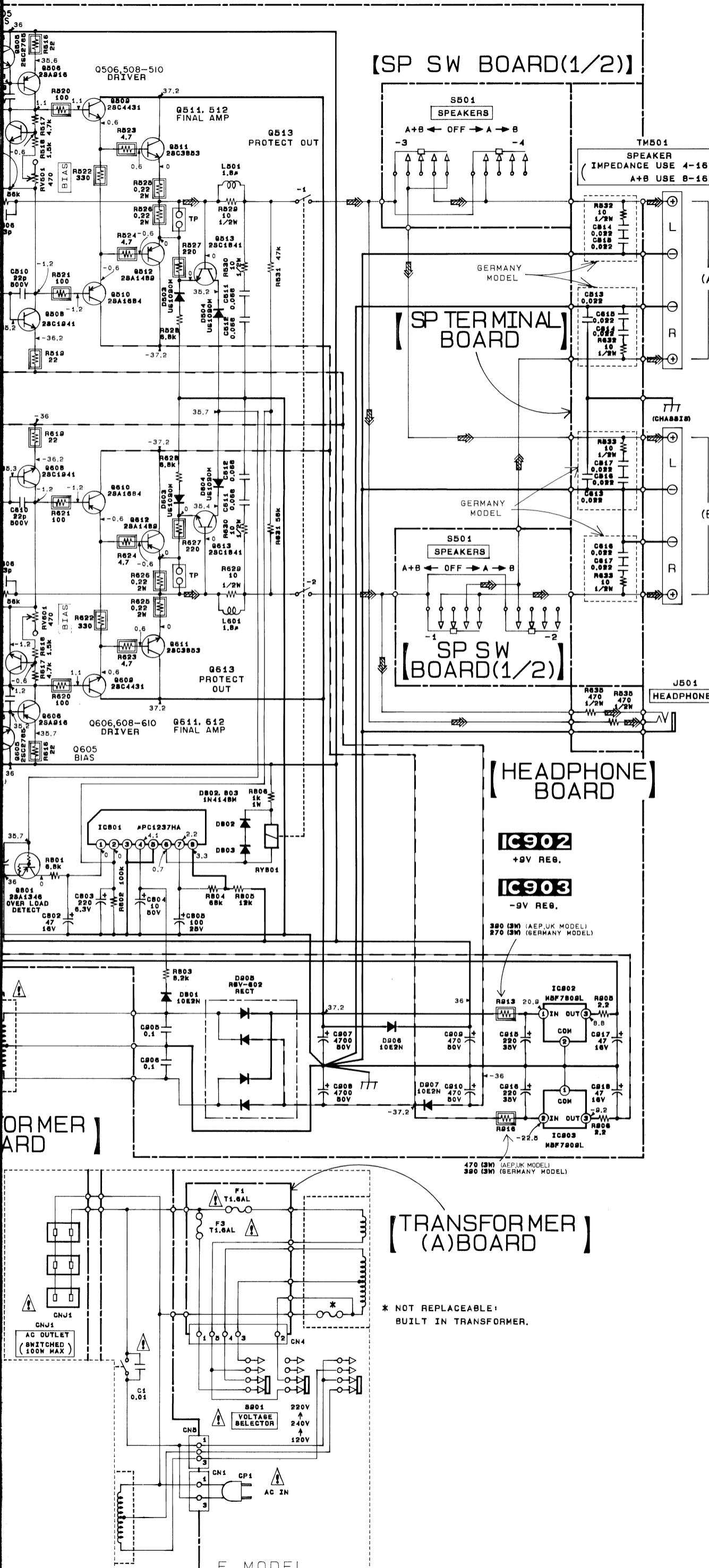












## Note :

- All capacitors are in  $\mu$  F unless otherwise noted. pF:  $\mu\mu$  F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $1/4$ W or less unless otherwise specified.
- : non-flammable resistor.
- : fusible resistor.

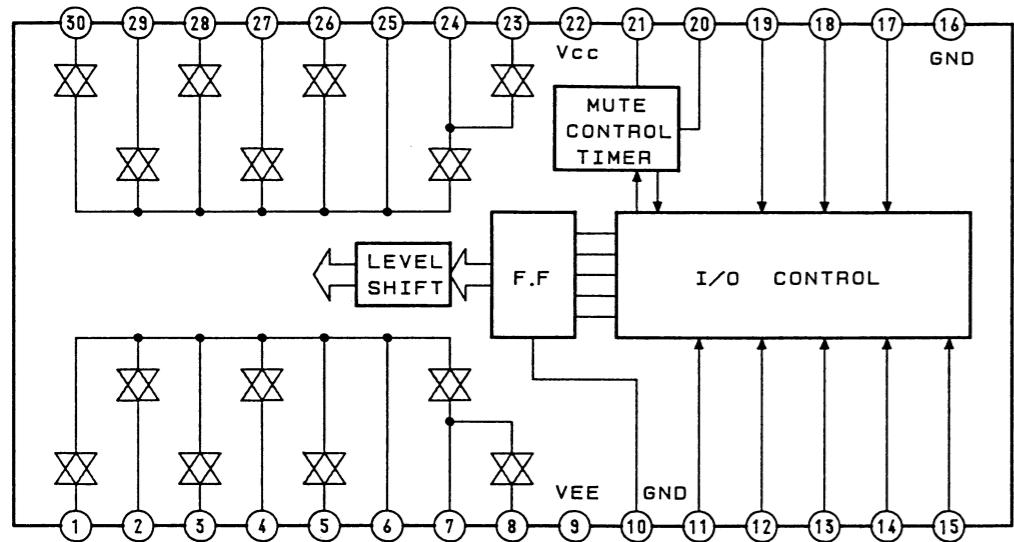
Note : The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

- : B+ Line
- : B- Line
- : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions. no mark : CD
- Voltages are taken with a VOM (Input impedance  $10M\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
- : PHONO

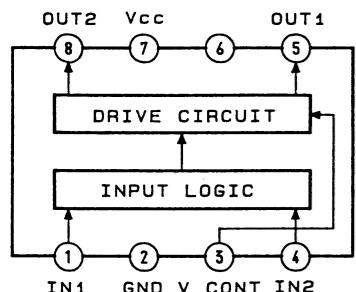
## SECTION 4 EXPLODED VIEWS

### 3-5. IC BLOCK DIAGRAM

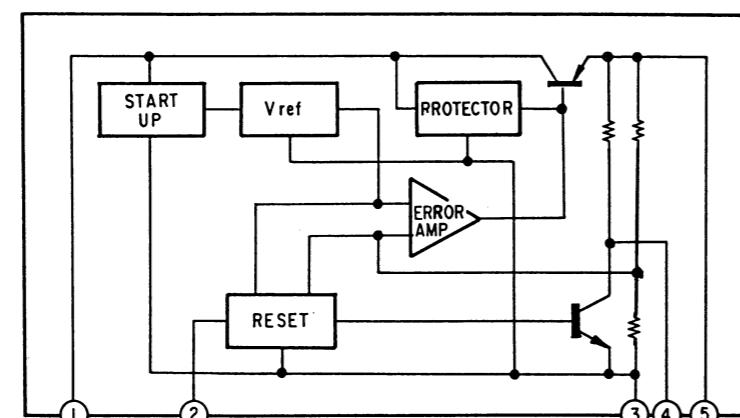
IC701 LC7818



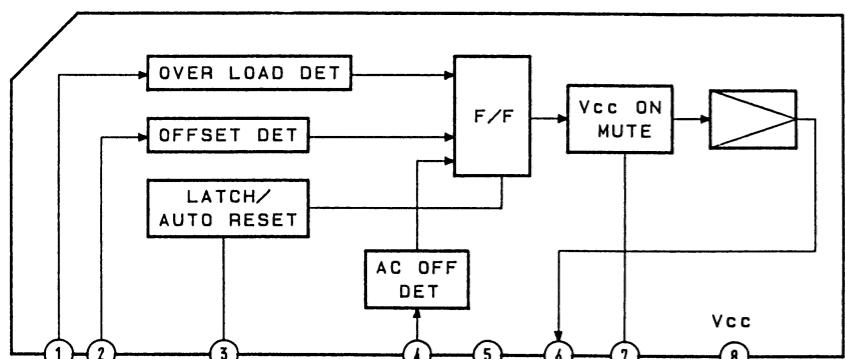
IC704 LB1639



IC901 L78MR-05



IC801 UPC1237HA



### NOTE:

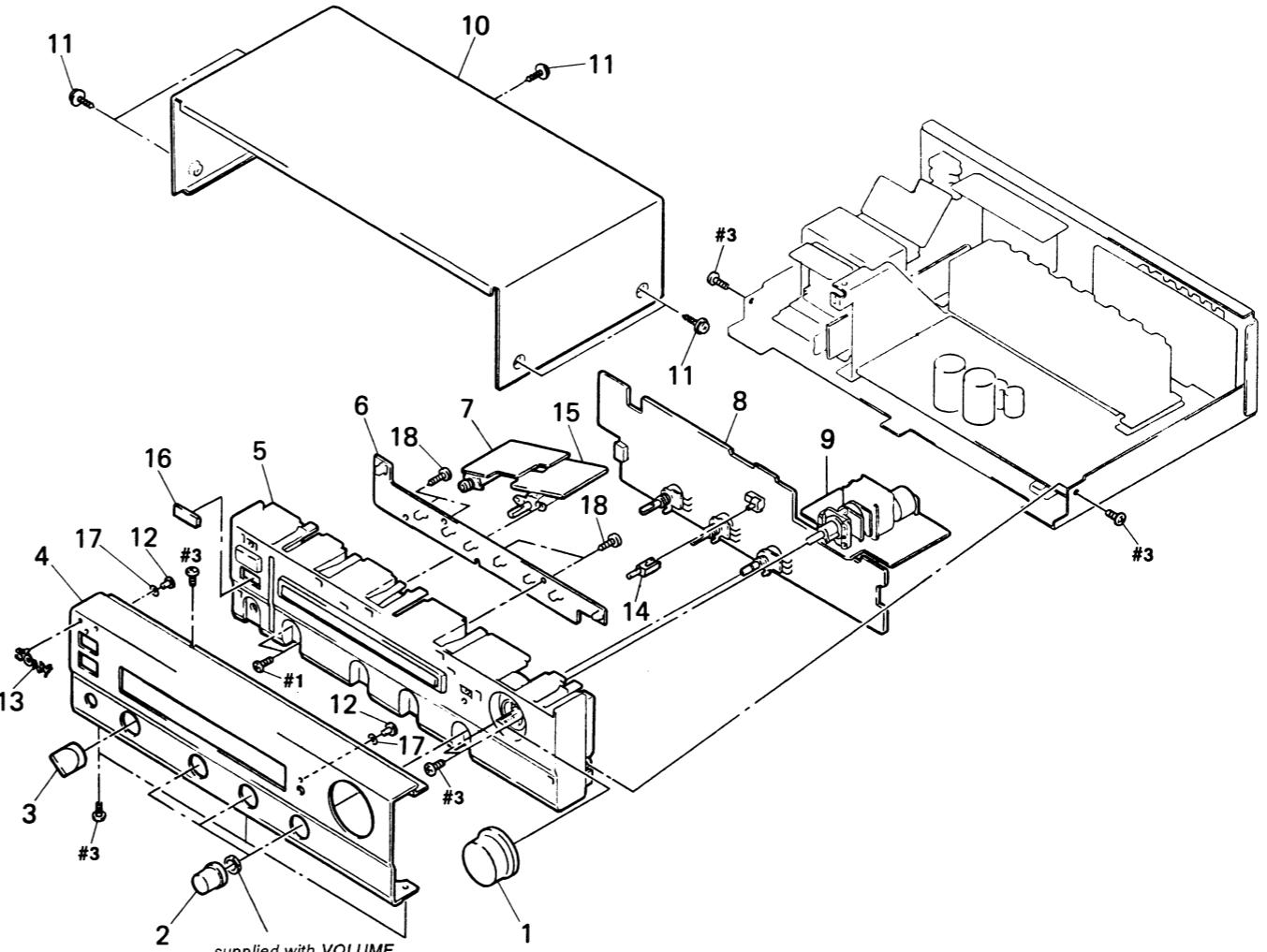
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Color indication of Appearance Parts Example: KNOB, BALANCE (WHITE) .... (RED)

Parts color Cabinet's color

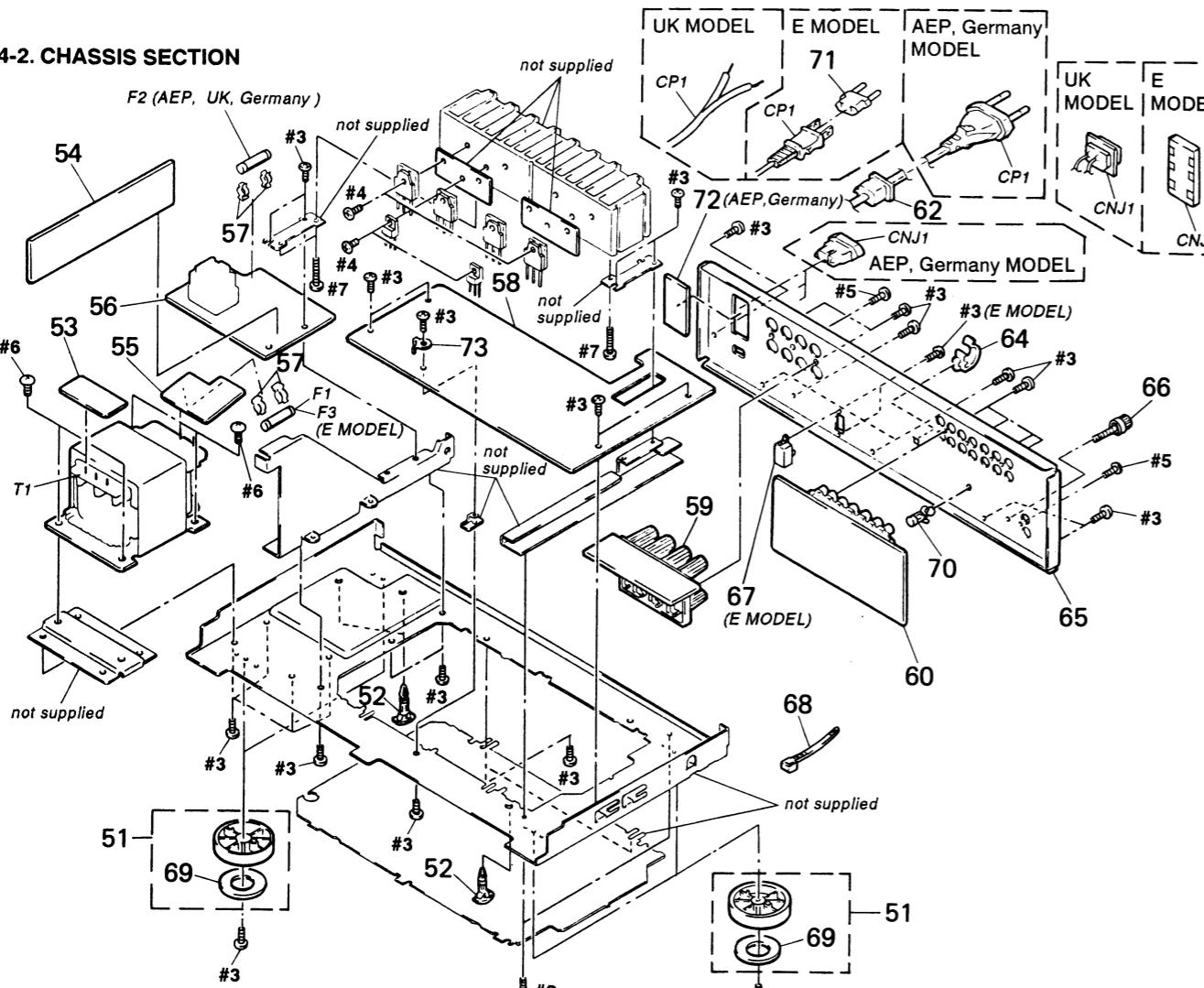
The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

### 4-1. FRONT PANEL SECTION



#### 4-2. CHASSIS SECTION



Note: The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
51	X-3304-938-2	FOOT ASSY	
* 52	3-704-198-31	SUPPORT, PC	
* 53	1-644-320-11	TRANSFORMER (B) BOARD	
* 54	1-644-311-11	JOINT BOARD	
* 55	1-644-318-11	TRANSFORMER (A) BOARD	
* 56	1-644-315-11	FUSE BOARD	
* 57	1-533-213-31	HOLDER, FUSE	
* 58	A-4347-660-A	MAIN BOARD, COMPLETE (E, AEP, UK)	
* 58	A-4347-661-A	MAIN BOARD, COMPLETE (Germany)	
* 59	1-644-319-11	SP. TM. BOARD	
* 60	A-4347-662-A	PIN JACK BOARD, COMPLETE (E, AEP, UK)	
* 60	A-4347-663-A	PIN JACK BOARD, COMPLETE (Germany)	
* 62	3-703-244-00	BUSHING (2104), CORD (AEP, Germany, UK)	
* 62	3-703-571-11	BUSHING (S) (4516), CORD (E)	
* 64	4-949-235-01	HOOK	
* 65	4-951-972-11	PANEL, BACK (AEP)	
* 65	4-951-972-21	PANEL, BACK (Germany)	
* 65	4-951-972-31	PANEL, BACK (UK)	
* 65	4-951-972-41	PANEL, BACK (E)	

#### FUNCTION FUSE

##### NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS  
All resistors are in ohms  
METAL: Metal-film resistor  
METAL OXIDE: Metal oxide-film resistor  
F: nonflammable
- CAPACITORS  
uF:  $\mu$ F
- COILS  
uH:  $\mu$ H

#### SECTION 5 ELECTRICAL PARTS LIST

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark				
* A-4347-667-A FUNCTION BOARD, COMPLETE											
*****											
< CONNECTOR >											
* CNJ301 1-691-244-11 SOCKET, CONNECTOR 10P											
* CNJ302 1-691-244-11 SOCKET, CONNECTOR 10P											
< DIODE >											
D707	8-719-987-63	DIODE	1N4148M	D708	8-719-987-63	DIODE	1N4148M				
D709	8-719-987-63	DIODE	1N4148M	D710	8-719-987-63	DIODE	1N4148M				
D711	8-719-987-63	DIODE	1N4148M	D712	8-719-987-63	DIODE	1N4148M				
D719	8-719-313-69	DIODE	SEL3210S-CD	D720	8-719-313-72	LED	SEL3810A-CD				
D722	8-719-313-72	LED	SEL3810A-CD	D723	8-719-018-46	LED	SEL3510C-CD				
D724	8-719-018-46	LED	SEL3510C-CD	D725	8-719-018-46	LED	SEL3510C-CD				
D726	8-719-018-46	LED	SEL3510C-CD	D727	8-719-018-46	LED	SEL3510C-CD				
< IC >											
IC703	8-749-920-83	IC	GP1U52XB	*****							
* 1-644-315-11 FUSE BOARD											
*****											
* 1-533-213-31 HOLDER, FUSE											
< CAPACITOR >											
▲C1	1-161-744-00	CERAMIC	0.01uF	400V	▲RY1	1-515-516-00	RELAY				
C901	1-136-153-00	FILM	0.01uF	5%	50V	< TRANSFORMER >					
C902	1-124-557-11	ELECT	1000uF	20%	25V	▲T2 1-448-523-11 TRANSFORMER, POWER					
C903	1-124-903-11	ELECT	1uF	20%	50V						
C904	1-124-477-11	ELECT	47uF	20%	25V						
C919	1-161-494-00	CERAMIC	0.022uF	25V							

**HEADPHONE** **JOINT** **MAIN**

Ref. No.	Part No.	Description	Remark
*	1-644-317-11	HEADPHONE BOARD	
		*****	
		< JACK >	
J501	1-507-863-51	JACK, PHONE (HEADPHONES)	
		< RESISTOR >	
R535	1-247-747-11	CARBON	470 5% 1/2W
R635	1-247-747-11	CARBON	470 5% 1/2W
		*****	
*	1-644-311-11	JOINT BOARD	
		*****	
		< CONNECTOR >	
CNJ702	1-568-319-11	SOCKET, CONNECTOR 8P	
CNP701	1-695-092-11	SOCKET, CONNECTOR 7P	
		*****	
*	A-4347-660-A	MAIN BOARD, COMPLETE (E, AEP, UK)	
*	A-4347-661-A	MAIN BOARD, COMPLETE (Germany)	
		*****	
*	4-942-204-01	PLATE, GROUND	
		< CAPACITOR >	
C501	1-124-927-11	ELECT	4.7uF 20% 100V
C502	1-124-927-11	ELECT	4.7uF 20% 100V
C503	1-162-282-31	CERAMIC	100PF 10% 50V (Germany)
C504	1-161-375-00	CERAMIC	0.022uF 20% 50V
C505	1-124-477-11	ELECT	47uF 20% 25V
C506	1-162-193-31	CERAMIC	3.3PF 10% 50V
C507	1-124-477-11	ELECT	47uF 20% 25V
C508	1-124-477-11	ELECT	47uF 20% 25V
C509	1-161-959-00	CERAMIC	22PF 10% 500V
C510	1-161-959-00	CERAMIC	22PF 10% 500V
C511	1-136-163-00	FILM	0.068uF 5% 50V
C512	1-136-163-00	FILM	0.068uF 5% 50V
C601	1-124-927-11	ELECT	4.7uF 20% 100V
C602	1-124-927-11	ELECT	4.7uF 20% 100V
C603	1-162-282-31	CERAMIC	100PF 10% 50V (Germany)
C604	1-161-375-00	CERAMIC	0.022uF 20% 50V
C605	1-124-477-11	ELECT	47uF 20% 25V
C606	1-162-193-31	CERAMIC	3.3PF 10% 50V
C607	1-124-477-11	ELECT	47uF 20% 25V
C608	1-124-477-11	ELECT	47uF 20% 25V
C609	1-161-959-00	CERAMIC	22PF 10% 500V

**MAIN**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C610	1-161-959-00	CERAMIC	22PF 10% 500V	L501	1-420-872-00	COIL, AIR CORE		R513	1-249-433-11	CARBON	22K 5% 1/4W
C611	1-136-163-00	FILM	0.068uF 5% 50V	L601	1-420-872-00	COIL, AIR CORE		R514	1-249-429-11	CARBON	10K 5% 1/4W
C612	1-136-163-00	FILM	0.068uF 5% 50V					R515	1-249-435-11	CARBON	33K 5% 1/4W
C801	1-124-907-11	ELECT	10uF 20% 50V					R516	1-247-692-11	CARBON	22 5% 1/4W
C802	1-124-477-11	ELECT	47uF 20% 25V					R517	1-249-425-11	CARBON	4.7K 5% 1/4W
C803	1-126-176-11	ELECT	220uF 20% 10V					R518	1-249-419-11	CARBON	1.5K 5% 1/4W
C804	1-124-907-11	ELECT	10uF 20% 50V					R519	1-247-692-11	CARBON	22 5% 1/4W
C805	1-124-478-11	ELECT	100uF 20% 25V					R520	1-247-700-11	CARBON	100 5% 1/4W
C905	1-136-165-00	FILM	0.1uF 5% 50V					R521	1-247-700-11	CARBON	100 5% 1/4W
C906	1-136-165-00	FILM	0.1uF 5% 50V					R522	1-247-706-11	CARBON	330 5% 1/4W
C907	1-126-138-11	ELECT	4700uF 20% 50V					R523	1-249-455-11	CARBON	4.7 5% 1/4W
C908	1-126-138-11	ELECT	4700uF 20% 50V					R524	1-249-455-11	CARBON	4.7 5% 1/4W
C909	1-124-913-11	ELECT	470uF 20% 50V					R525	1-216-361-00	METAL OXIDE	0.22 5% 2W F
C910	1-124-913-11	ELECT	470uF 20% 50V					R526	1-216-361-00	METAL OXIDE	0.22 5% 2W F
C915	1-124-484-11	ELECT	220uF 20% 35V					R527	1-247-704-11	CARBON	220 5% 1/4W
C916	1-124-484-11	ELECT	220uF 20% 35V					R528	1-249-427-11	CARBON	6.8K 5% 1/4W
C917	1-124-477-11	ELECT	47uF 20% 25V					R529	1-247-727-11	CARBON	10 5% 1/2W
C918	1-124-477-11	ELECT	47uF 20% 25V					R530	1-247-727-11	CARBON	10 5% 1/2W
		< CONNECTOR >						R531	1-249-437-11	CARBON	47K 5% 1/4W
								R536	1-249-409-11	CARBON	220 5% 1/4W
								R537	1-249-417-11	CARBON	1K 5% 1/4W
								R538	1-249-423-11	CARBON	3.3K 5% 1/4W
								R601	1-249-423-11	CARBON	3.3K 5% 1/4W
								R602	1-249-417-11	CARBON	1K 5% 1/4W
								R603	1-249-421-11	CARBON	2.2K 5% 1/4W
								R604	1-249-393-11	CARBON	10 5% 1/4W
								R606	1-247-704-11	CARBON	220 5% 1/4W
								R607	1-247-704-11	CARBON	220 5% 1/4W
								R608	1-249-490-11	CARBON	27K 5% 1/2W
								R609	1-249-413-11	CARBON	470 5% 1/4W
								R610	1-249-438-11	CARBON	56K 5% 1/4W
								R611	1-249-438-11	CARBON	56K 5% 1/4W
								R613	1-249-433-11	CARBON	22K 5% 1/4W
								R614	1-249-429-11	CARBON	10K 5% 1/4W
								R615	1-249-435-11	CARBON	33K 5% 1/4W
								R616	1-247-692-11	CARBON	22 5% 1/4W
								R617	1-249-425-11	CARBON	4.7K 5% 1/4W
								R618	1-249-419-11	CARBON	1.5K 5% 1/4W
								R619	1-247-692-11	CARBON	22 5% 1/4W
								R620	1-247-700-11	CARBON	100 5% 1/4W
								R621	1-247-700-11	CARBON	100 5% 1/4W
								R622	1-247-706-11	CARBON	330 5% 1/4W
								R623	1-249-455-11	CARBON	4.7 5% 1/4W
								R624	1-249-455-11	CARBON	4.7 5% 1/4W
								R625	1-216-361-00	METAL OXIDE	0.22 5% 2W F
								R626	1-216-361-00	METAL OXIDE	0.22 5% 2W F
								R627	1-247-704-11	CARBON	220 5% 1/4W
								R628	1-249-427-11	CARBON	6.8K 5% 1/4W
								R629	1-247-727-11	CARBON	10 5% 1/2W

Ref. No.		Part No.		Description		Remark		Ref. No.		Part No.		Description		Remark	
R630	1-247-727-11	CARBON	10	5%	1/2W			C710	1-162-284-31	CERAMIC	150PF	10%	50V		
R631	1-249-438-11	CARBON	56K	5%	1/4W			C711	1-162-284-31	CERAMIC	150PF	10%	50V		
R636	1-249-409-11	CARBON	220	5%	1/4W			C712	1-124-477-11	ELECT	47uF	20%	25V		
R637	1-249-417-11	CARBON	1K	5%	1/4W			C713	1-161-494-00	CERAMIC	0.022uF		25V		
R638	1-249-423-11	CARBON	3.3K	5%	1/4W			C714	1-136-165-00	FILM	0.1uF	5%	50V		
R801	1-249-427-11	CARBON	6.8K	5%	1/4W			C715	1-124-477-11	ELECT	47uF	20%	25V		
R802	1-249-441-11	CARBON	100K	5%	1/4W			C717	1-161-494-00	CERAMIC	0.022uF		25V		
R803	1-249-428-11	CARBON	8.2K	5%	1/4W			C718	1-124-477-11	ELECT	47uF	20%	25V		
R804	1-249-439-11	CARBON	68K	5%	1/4W										
R805	1-249-430-11	CARBON	12K	5%	1/4W										
R806	1-215-869-11	METAL OXIDE	1K	5%	1W F										
R905	1-249-385-11	CARBON	2.2	5%	1/6W										
R906	1-249-385-11	CARBON	2.2	5%	1/6W										
R913	1-216-478-11	METAL OXIDE	390	5%	3W F (E, AEP, UK)										
R913	1-216-477-11	METAL OXIDE	270	5%	3W F (Germany)										
R916	1-215-915-11	METAL OXIDE	470	5%	3W F (E, AEP, UK)										
R916	1-216-478-11	METAL OXIDE	390	5%	3W F (Germany)										
< VARIABLE RESISTOR >															
RV501	1-238-011-11	RES, ADJ, CARBON	470	(DC BIAS L-CH)				D713	8-719-987-63	DIODE	1N4148M				
RV601	1-238-011-11	RES, ADJ, CARBON	470	(DC BIAS R-CH)				D714	8-719-987-63	DIODE	1N4148M				
< RELAY >															
RY801	1-515-533-11	RELAY						D715	8-719-987-63	DIODE	1N4148M				
*****															
*      1-644-321-11	OUTLET BOARD	(AEP, Germany)						D716	8-719-987-63	DIODE	1N4148M				
*****															
< OUTLET >															
⚠      1-526-794-11	OUTLET, AC	(AEP, Germany)						D717	8-719-987-63	DIODE	1N4148M				
*****															
*      A-4347-665-A	PANEL BOARD, COMPLETE							D718	8-719-987-63	DIODE	1N4148M				
*****															
< CAPACITOR >															
C301	1-130-481-00	MYLAR	0.0068uF	5%	50V										
C302	1-130-474-00	MYLAR	0.0018uF	5%	50V			R302	1-249-421-11	CARBON	2.2K	5%	1/4W		
C303	1-136-159-00	FILM	0.033uF	5%	50V			R303	1-249-426-11	CARBON	5.6K	5%	1/4W		
C304	1-130-479-00	MYLAR	0.0047uF	5%	50V			R304	1-247-903-00	CARBON	1M	5%	1/4W		
C401	1-130-481-00	MYLAR	0.0068uF	5%	50V			R305	1-247-903-00	CARBON	1M	5%	1/4W		
C402	1-130-474-00	MYLAR	0.0018uF	5%	50V			R306	1-247-852-11	CARBON	7.5K	5%	1/4W		
C403	1-136-159-00	FILM	0.033uF	5%	50V			R308	1-247-870-11	CARBON	43K	5%	1/4W		
C404	1-130-479-00	MYLAR	0.0047uF	5%	50V			R309	1-249-436-11	CARBON	39K	5%	1/4W		
C708	1-161-494-00	CERAMIC	0.022uF		25V			R310	1-249-437-11	CARBON	47K	5%	1/4W		
C709	1-161-494-00	CERAMIC	0.022uF		25V			R402	1-249-421-11	CARBON	2.2K	5%	1/4W		
								R403	1-249-426-11	CARBON	5.6K	5%	1/4W		
								R404	1-247-903-00	CARBON	1M	5%	1/4W		
								R405	1-247-903-00	CARBON	1M	5%	1/4W		
								R406	1-247-852-11	CARBON	7.5K	5%	1/4W		

PANEL		PIN JACK									
Ref. No.	Part No.	Description		Remark		Ref. No.	Part No.	Description		Remark	
R408	1-247-870-11	CARBON	43K	5%	1/4W	*	A-4347-662-A	PIN JACK BOARD, COMPLETE	(E, AEP, UK)		
R409	1-249-436-11	CARBON	39K	5%	1/4W	*	A-4347-663-A	PIN JACK BOARD, COMPLETE	(Germany)		
R410	1-249-437-11	CARBON	47K	5%	1/4W	*****					
R708	1-249-414-11	CARBON	560	5%	1/4W	< CAPACITOR >					
R709	1-249-411-11	CARBON	330	5%	1/4W	C101	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R710	1-249-411-11	CARBON	330	5%	1/4W	C102	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R711	1-249-411-11	CARBON	330	5%	1/4W	C103	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R712	1-249-411-11	CARBON	330	5%	1/4W	C104	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R713	1-249-411-11	CARBON	330	5%	1/4W	C105	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R714	1-249-433-11	CARBON	22K	5%	1/4W	C106	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R715	1-249-433-11	CARBON	22K	5%	1/4W	C107	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R716	1-249-433-11	CARBON	22K	5%	1/4W	C108	1-162-285-31	CERAMIC	180PF	10%	50V
R717	1-249-433-11	CARBON	22K	5%	1/4W	C109	1-162-282-31	CERAMIC	100PF	10%	50V (Germany)
R718	1-249-433-11	CARBON	22K	5%	1/4W	C110	1-124-907-11	ELECT	10uF	20%	50V
R719	1-249-433-11	CARBON	22K	5%	1/4W	C111	1-124-477-11	ELECT	47uF	20%	25V
R720	1-249-433-11	CARBON	22K	5%	1/4W	C112	1-162-282-31	CERAMIC	100PF	10%	50V (AEP, UK, E)
R721	1-247-903-00	CARBON	1M	5%	1/4W	C112	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R722	1-249-423-11	CARBON	3.3K	5%	1/4W	C113	1-130-480-00	MYLAR	0.0056uF	5%	50V
R723	1-249-429-11	CARBON	10K	5%	1/4W	C114	1-130-473-00	MYLAR	0.0015uF	5%	50V
R724	1-249-417-11	CARBON	1K	5%	1/4W	C115	1-124-927-11	ELECT	4.7uF	20%	100V
R725	1-249-417-11	CARBON	1K	5%	1/4W	C116	1-124-477-11	ELECT	47uF	20%	25V
R726	1-249-393-11	CARBON	10	5%	1/4W	C117	1-124-925-11	ELECT	2.2uF	20%	100V
R727	1-249-425-11	CARBON	4.7K	5%	1/4W	C201	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R728	1-249-412-11	CARBON	390	5%	1/4W	C202	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R729	1-249-417-11	CARBON	1K	5%	1/4W	C203	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R730	1-249-421-11	CARBON	2.2K	5%	1/4W	C204	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R731	1-249-421-11	CARBON	2.2K	5%	1/4W	C205	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R732	1-247-750-11	CARBON	680	5%	1/2W	C206	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R733	1-249-441-11	CARBON	100K	5%	1/4W	C207	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)
R734	1-249-425-11	CARBON	4.7K	5%	1/4W	C208	1-162-285-31	CERAMIC	180PF	10%	50V
R736	1-249-419-11	CARBON	1.5K	5%	1/4W	C209	1-162-282-31	CERAMIC	100PF	10%	50V (Germany)
< VARIABLE RESISTOR >											
RV301	1-238-513-11	RES, VAR, CARBON	150K/150K	(BALANCE)		C210	1-124-907-11	ELECT	10uF	20%	50V
RV302	1-238-514-11	RES, VAR	250K/250K	(TREBLE)		C211	1-124-477-11	ELECT	47uF	20%	25V
RV303	1-238-515-11	RES, VAR, CARBON	520K/520K	(BASS)		C212	1-162-282-31	CERAMIC	100PF	10%	50V (AEP, UK, E)
< SWITCH >											
S301	1-572-642-11	SWITCH, PUSH (1 KEY)	(SOURCE DIRECT)	C212	1-162-284-31	CERAMIC	150PF	10%	50V (Germany)		
S701	1-554-303-21	SWITCH, TACTILE	(POWER)	C213	1-130-480-00	MYLAR	0.0056uF	5%	50V		
S702	1-554-303-21	SWITCH, TACTILE	(DAT/TAPE1)	C214	1-130-473-00	MYLAR	0.0015uF	5%	50V		
S703	1-554-303-21	SWITCH, TACTILE	(TAPE2)	C215	1-124-927-11	ELECT	4.7uF	20%	100V		
S704	1-554-303-21	SWITCH, TACTILE	(AUX)	C216	1-124-477-11	ELECT	47uF	20%	25V		
S705	1-554-303-21	SWITCH, TACTILE	(CD)	C701	1-124-472-11	ELECT	470uF	20%	10V		
S706	1-554-303-21	SWITCH, TACTILE	(TUNER)	C702	1-161-494-00	CERAMIC	0.022uF		25V		
S707	1-554-303-21	SWITCH, TACTILE	(PHONO)	C703	1-161-494-00	CERAMIC	0.022uF		25V		
< VIBRATOR >											
X701	1-577-077-11	VIBRATOR, CERAMIC	C704	1-124-477-11	ELECT	47uF	20%	25V			
			C705	1-161-494-00	CERAMIC	0.022uF		25V			

Note: The components identified by mark  or dotted line with mark  are critical for safety.  
Replace only with part number specified.

PIN JACK	SP. SW.	SP. TM.
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Ref. No.	Part No.	Description	Remark
< CONNECTOR >			
* CNP101 1-568-322-21 PLUG, CONNECTOR 10P			
* CNP102 1-568-322-21 PLUG, CONNECTOR 10P			
< DIODE >			
D701	8-719-200-77	DIODE 10E2N	
D702	8-719-200-77	DIODE 10E2N	
D703	8-719-987-63	DIODE 1N4148M	
D704	8-719-987-63	DIODE 1N4148M	
D705	8-719-933-33	DIODE HZS6A1L	
D706	8-719-987-63	DIODE 1N4148M	
< IC >			
IC101	8-759-636-74	IC M5218AP-22	
IC102	8-759-801-01	IC LC4966	
IC701	8-759-802-52	IC LC7818	
< JACK >			
J101	1-573-141-21	JACK 2P (PHONO)	
* J102	1-573-142-21	JACK, PIN 4P (DAT/TAPE1)	
* J103	1-573-142-21	JACK, PIN 4P (TAPE2)	
J104	1-568-978-11	JACK 6P (TUNER/CD/AUX)	
< TRANSISTOR >			
Q101	8-729-900-36	TRANSISTOR DTC124ES	
Q102	8-729-900-63	TRANSISTOR DTA124ES	
Q701	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q702	8-729-900-63	TRANSISTOR DTA124ES	
Q703	8-729-900-63	TRANSISTOR DTA124ES	
Q704	8-729-900-63	TRANSISTOR DTA124ES	
Q705	8-729-900-63	TRANSISTOR DTA124ES	
Q706	8-729-900-63	TRANSISTOR DTA124ES	
< RESISTOR >			
R101	1-249-409-11	CARBON 220 5% 1/4W (Germany)	
R102	1-249-417-11	CARBON 1K 5% 1/4W	
R103	1-249-409-11	CARBON 220 5% 1/4W (Germany)	
R104	1-249-417-11	CARBON 1K 5% 1/4W	
R105	1-249-409-11	CARBON 220 5% 1/4W (Germany)	
R106	1-249-409-11	CARBON 220 5% 1/4W (Germany)	
R107	1-249-409-11	CARBON 220 5% 1/4W (Germany)	
R108	1-249-418-11	CARBON 1.2K 5% 1/4W	
R109	1-249-418-11	CARBON 1.2K 5% 1/4W (Germany)	
R110	1-249-441-11	CARBON 100K 5% 1/4W	
R111	1-249-416-11	CARBON 820 5% 1/4W	
R112	1-247-897-11	CARBON 560K 5% 1/4W	
R113	1-249-437-11	CARBON 47K 5% 1/4W	
R114	1-249-409-11	CARBON 220 5% 1/4W	
R115	1-249-441-11	CARBON 100K 5% 1/4W	

Ref. No.	Part No.	Description	Remark
< CONNECTOR >			
* CNP101 1-568-322-21 PLUG, CONNECTOR 10P			
* CNP102 1-568-322-21 PLUG, CONNECTOR 10P			
< DIODE >			
R116	1-249-441-11	CARBON 100K 5% 1/4W	
R117	1-249-433-11	CARBON 22K 5% 1/4W	
R118	1-249-433-11	CARBON 22K 5% 1/4W	
R119	1-249-441-11	CARBON 100K 5% 1/4W	
R201	1-249-409-11	CARBON 220 5% 1/4W (Germany)	
R202	1-249-417-11	CARBON 1K 5% 1/4W	
R203	1-249-409-11	CARBON 220 5% 1/4W (Germany)	
R204	1-249-417-11	CARBON 1K 5% 1/4W	
R205	1-249-409-11	CARBON 220 5% 1/4W (Germany)	
R206	1-249-409-11	CARBON 220 5% 1/4W (Germany)	
R207	1-249-409-11	CARBON 220 5% 1/4W (Germany)	
R208	1-249-418-11	CARBON 1.2K 5% 1/4W	
R209	1-249-418-11	CARBON 1.5K 5% 1/4W (Germany)	
R210	1-249-441-11	CARBON 100K 5% 1/4W	
R211	1-249-416-11	CARBON 820 5% 1/4W	
R212	1-247-897-11	CARBON 560K 5% 1/4W	
R213	1-249-437-11	CARBON 47K 5% 1/4W	
R214	1-249-409-11	CARBON 220 5% 1/4W	
R215	1-249-441-11	CARBON 100K 5% 1/4W	
R216	1-249-441-11	CARBON 100K 5% 1/4W	
R301	1-249-405-11	CARBON 100 5% 1/4W	
R401	1-249-405-11	CARBON 100 5% 1/4W	
R701	1-247-901-11	CARBON 820K 5% 1/4W	
R702	1-249-433-11	CARBON 22K 5% 1/4W	
R703	1-249-441-11	CARBON 100K 5% 1/4W	
R704	1-249-433-11	CARBON 22K 5% 1/4W	
R705	1-249-429-11	CARBON 10K 5% 1/4W	
R706	1-249-429-11	CARBON 10K 5% 1/4W	
R707	1-249-433-11	CARBON 22K 5% 1/4W	
R732	1-249-433-11	CARBON 22K 5% 1/4W	
*****			
* 1-644-316-11 SP. SW. BOARD			
*****			
< SWITCH >			
S501	1-692-168-11	SWITCH, ROTARY SLIDE (SPEAKER)	
*****			
* 1-644-319-11 SP. TM. BOARD			
*****			
< CAPACITOR >			
C513	1-136-157-00	FILM 0.022uF 5% 50V (Germany)	
C514	1-136-157-00	FILM 0.022uF 5% 50V (Germany)	
C515	1-136-157-00	FILM 0.022uF 5% 50V (Germany)	
C516	1-136-157-00	FILM 0.022uF 5% 50V (Germany)	
C517	1-136-157-00	FILM 0.022uF 5% 50V (Germany)	

## SP. TM.

## TRANSFORMER (A)

Ref. No.	Part No.	Description	Remark
C613	1-136-157-00	FILM	0.022uF 5% 50V (Germany)
C614	1-136-157-00	FILM	0.022uF 5% 50V (Germany)
C615	1-136-157-00	FILM	0.022uF 5% 50V (Germany)
C616	1-136-157-00	FILM	0.022uF 5% 50V (Germany)
C617	1-136-157-00	FILM	0.022uF 5% 50V (Germany)

&lt; CONNECTOR &gt;

\* CN502 1-564-509-11 PLUG, CONNECTOR 6P

&lt; RESISTOR &gt;

R532	1-247-727-11	CARBON	10 5% 1/2W (Germany)
R533	1-247-727-11	CARBON	10 5% 1/2W (Germany)
R632	1-247-727-11	CARBON	10 5% 1/2W (Germany)
R633	1-247-727-11	CARBON	10 5% 1/2W (Germany)

&lt; TERMINAL &gt;

TM501 1-537-235-11 TERMINAL BOARD (SP) (E, AEP1, UK)  
 TM501 1-537-227-11 TERMINAL BOARD (SP) (AEP2)  
 TM501 1-537-228-11 TERMINAL BOARD (SP) (Germany)

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\* 1-644-318-11 TRANSFORMER (A) BOARD  
\*\*\*\*\*

\* 1-533-213-31 HOLDER, FUSE

&lt; CONNECTOR &gt;

\* CN4 1-580-633-11 PIN, CONNECTOR 5P (E)

&lt; FUSE &gt;

▲F1 1-532-259-00 FUSE, TIME-LAG (T1.6A)  
 ▲F3 1-532-259-00 FUSE, TIME-LAG (T1.6A) (E)

\*\*\*\*\*

\* 1-644-320-11 TRANSFORMER (B) BOARD  
\*\*\*\*\*

## NOTE:

●AEP2: Model for Scandinavian countries,  
Switzerland, Spain and Portugal

●AEP1: Model for other European countries

## TRANSFORMER (B)

## VOL

Ref. No.	Part No.	Description	Remark
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\* 1-644-313-11 VOL BOARD  
\*\*\*\*\*

&lt; CAPACITOR &gt;

C719 1-136-165-00 FILM 0.1uF 5% 50V

&lt; VARIABLE RESISTOR &gt;

RV304 1-241-921-11 RES, VAR, CARBON 120K/120K (VOLUME)

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## MISCELLANEOUS

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▲67 1-571-515-11 SWITCH, POWER VOLTAGE SELECTION (E)

▲71 1-569-007-11 ADAPTER, CONVERSION 2P (E)

▲CNJ1 1-526-696-31 OUTLET, AC (3 GANG) (E)

▲CNJ1 1-526-751-00 OUTLET, AC (UK)

▲CP1 1-558-946-21 CORD, POWER (UK)

▲CP1 1-575-651-21 CORD, POWER (AEP, Germany)

▲CP1 1-575-653-21 CORD, POWER (E)

▲T1 1-450-953-11 TRANSFORMER, POWER (AEP)

▲T1 1-450-954-11 TRANSFORMER, POWER (UK)

▲T1 1-450-955-11 TRANSFORMER, POWER (Germany)

▲T1 1-450-956-11 TRANSFORMER, POWER (E)

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## ACCESSORIES &amp; PACKING MATERIALS

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1-693-131-11 REMOTE COMMANDER (RM-S311)

2-181-754-01 COVER, BATTERY (REMOTE COMMANDER)

3-755-074-11 MANUAL, INSTRUCTION (E, AEP, UK)

(ENGLISH/FRENCH/SPANISH/PORTUGUESE)

3-755-074-41 MANUAL, INSTRUCTION (AEP, Germany)

(GERMAN/DUTCH/SWEDISH/ITALIAN)

\* 4-945-810-02 CUSHION (LEFT)

\* 4-945-811-01 CUSHION (RIGHT)

\* 4-951-289-01 INDIVIDUAL CARTON

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## HARDWARE LIST

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#1 7-682-548-09 SCREW +B 3X8

#3 7-685-646-79 SCREW +BVTP 3X8 TYPE2 N-S

#4 7-685-648-79 SCREW +BVTP 3X12 TYPE2

#5 7-621-849-00 SCREW (BV/RING)

#6 7-682-560-04 SCREW +BVTT 4X6 (S)

#7 7-685-647-79 SCREW +BVTP 3X10 TYPE2 IT-3

Note: The components identified by mark ▲ or dotted line with mark ▲ are critical for safety. Replace only with part number specified.

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